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<120> Raftin Gene, Product and Use thereof

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<150> US60/400,836

<151> 2002-08-02

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 <212> DNA
 <213> Triticum aestivum

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 acggcgaggg tgttctggcg cgccgtgctg ccgcactcgc cattgccga cgccgttctc 240
 cgctctctca aacaacctgc agcaggctgt tcttgcatgt tcctcgtcgc cctccgttaa 300
 ctgtcttctt ctctcgagtt tgattgatca ccaaacacaa aatgcatgc acgcgtacgc 360
 gtaggtgttg aactgcacac agaagccacc agcttcgtaa gagacccga ggacaggccc 420

cccttcgact accgtgatta c

441

<210> 37
 <211> 1301
 <212> DNA
 <213> *Oryza sativa*

<400> 37

gtcgcagtcg tctccggcga gaaatcggct gcgccccgtc tctctctctc tcgaacgctt	60
ccatggcgcg ctctctctc ctctctctc cgtctcgccg tgccgcccgc gtgctttcgc	120
tgggcgacgc ggcgcgctc acggccgagg tgttctggcg cgccgtgctg ccggaatccc	180
cgttgccgga cgccttctc cgcctctcc gccctgacac cagcttcgtc gtcggcaaag	240
cggaggcggc cgggtggcg gcgaggaccg gattccccct cgattacact gactacaggg	300
gatctgattc tccgacgacg gcgagtgggt tggacctcgc cggtgacttc ggcgagccgg	360
cgcctttcgg ctacgactac agtgcacagg gcgaaggcgg cggcggcggc gccgcccgcg	420
ccgcgggaga gcaggttctt gccgtcgacg cgggcttcaa ctacgacaaa tacgtcggcg	480
cgaggaagct ccgcgggcg agcagcaccg ccggcggaga gaatgatgac gagcctttcg	540
ggtacgacta caaggcgccg agcagcggca gcggcaccgc ggcgtcgacg acggcgcgag	600
gcgtcggcac gggcgccacg acgacggtgt tcttccacga ggaggcgggt gcgctcgcg	660
agaggctccc gttctacttc ccggcgcgga cgacgtcggc gctgggcttc ctgccgcgcc	720
gcgtcgcgga ctccatcccg ttcacggcgg ccgcgtgcc gcccgctc cgcgtgttcg	780
gcgtcgcgcc ggacaccgcc gaggcggccg gcatgaggga gacgtgcgc acgtgcgagt	840
ggccgaccct cgcggcgag tccaagttct gcgccacgtc gctggaggcc ctggtggagg	900
gcgccatggc ggcgtcggg acacgcgaca tcgcccgcgt ggcgtcgacg ctgccccgcg	960
gcggcgcgcc gctgcaggcg tacgccgtcc gcgcgtgct cccgctcgag ggcgcgggt	1020
tcgtggcgtg ccacgaccag gcgtaccgt acaccgtgta ccgtgccac accaccggcc	1080
cggccagagc ttacatggtg gagatggaag gcgacggcgg cggcgatggc ggcgaggcgg	1140
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tcaagctcct cggcaccaag cccggcgggt cgcgggtgtg ccacctcatg ccgtacgggc	1260
acatcgtctg ggccaagaac gtgaagagct cgacggcgta g	1301

<210> 38
 <211> 1479
 <212> DNA
 <213> Oryza sativa

<400> 38

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gtgcagtcg tctccggcga gaaatcggct gcgccccgtc tctctctctc togaacgctt      60
ccatggcgcg cttcctcctc ctccctcgctg ccgtcgccgc tgcgcgcgcg gtgcttttcgg      120
tacaactcatg atgccgctac tcagctgagc catgcaccgt tgcacccgta tactaacgat      180
cgctcgatcg accgacgatg tgtgttcttc agcagctggg cgacgcggcg ccgtcgacgg      240
ccgaggtgtt ctggcgcgcc gtgctgccgg aatccccgtt gccggacgcc ttcctccgcc      300
tcctccgccc tggtcggtgt ccttccttcc tccttcgcgc gcgcgcgcgc gccattactc      360
tcctcgaggt ttgatttggt tgtggacgtt gcagacacca gcttcgtcgt cggcaaagcg      420
gaggcggccg gtggcgcggc gcggaccgga ttccccttcg attacactga ctacagggga      480
tctgattctc cgacgacggc gagtggtttg gacctcgccg gtgacttcgg cgagccggcg      540
cctttcggct acgactacag tgcacagggc gaaggcggcg gcggcggcgc cgccgcgcgc      600
gcgggagagc aggttcttgc cgtcgacgcg ggcttcaact acgacaaata cgtcggcgcg      660
aggaagctcc gcggcggcag cagcaccgcc ggcgagaga atgatgacga gcctttcggg      720
tacgactaca aggcgcgcag cagcggcagc ggcaccgcgg cgtcgacgac ggcgcgaggc      780
gtcggcacgg gcgccacgac gacgggtgtt tccacgagg aggcggtgcg cgtcggcgag      840
aggctcccgt tctacttccc ggcggcgacg acgtcggcgc tgggcttctt gccgcgcgcg      900
gtcgcggact ccatcccgtt cacggcggcc gcgctgccgg ccgtcctcgc gctgttcggc      960
gtcgcgcggg acaccgccga ggcggccggc atgagggaga cgctgcgcac gtgcgagtgg      1020
ccgaccctcg ccggcgagtc caagttctgc gccacgtcgc tggaggccct ggtggagggc      1080
gccatggcgg cgctcgggac acgcgacatc gccgcgctgg cgtcgacgct gccccgcggc      1140
ggcgcgccgc tgcaggcgta cgccgtccgc gccgtgctcc ccgtcgaggg cgccggcttc      1200
gtggcgtgcc acgaccaggc gtaccctac accgtgtacc gctgccacac caccggcccg      1260
gccagagctt acatggtgga gatggaaggc gacggcggcg gcgatggcgg cgaggcgggtg      1320
accgtggcca ccgtgtgcca caccaacacg tcgggtgga acccgagca cgtctcgttc      1380
aagctcctcg gcaccaagcc cggcggtcgc ccggtgtgcc acctcatgcc gtacgggcac      1440
atcgtctggg ccaagaacgt gaagagctcg acggcgtag      1479

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<210> 39
 <211> 1461
 <212> DNA
 <213> *Oryza sativa*

<400> 39

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cgaaggcaaa ctctggtaag gattccatt acacgaatca atttaataag tctaaaacga      60
acactatggt atgagaaaca cctcacatcc gtccataacc gtgggcatga ctatttaaaa      120
agtttaacta aactctacaa aagttgcacg ctttaccac acgtcatgaa cgtttcacat      180
taccgaatac atgtggatcg gacatggccg acaaaggaga gttcaatata aggcttttcc      240
ataaccaatc cataaatatc ctatgtccca cggttgggtg gaatctctcc accaaacatc      300
aagccaggat caggtcctca tctacccatg cccactcca tggactccga cacatcccca      360
ctgcaggaga ttgccatata cgccaccata ccagtgtcc tcaaccgcta acatgttgga      420
caccaaattc tatatactta tatagttcat ctccactaag tgtagttaat tacatttctc      480
tcttctctca ttaagccaca tcacctcaat tttttttagc ctttagatga tagatctatg      540
gtccaaattg tcttttcttt cttctctctt aaaaacatgc aatcttaaat acttttaggc      600
tcaaaattgt atcaaattgt tttagttttg tacatattat gcaacttaat ttttcgccgc      660
aacgcggagg ggtatttcat ctagtattat ttaagagcta tacacactgc tataggggaa      720
aaaaagata ggtttggccc cctggtcagt cctgttgac ggctatatgt tgaagggaaa      780
aagccagtac gttttgtagg ttgttttttt tttagaattg ctaaaaagtt gtggcatggt      840
ttttaggtaa aagcctttta atataagtta cattgtaact acagtgtaat tccgctgtaa      900
ctatattgta atctctatat aagttagata taaaattaca tatatattat ttttaacttt      960
atttataagt tagtatatta tagttataat ggaattaatt ataattatag tatagttaga     1020
tttgaaagtt tttcctttta gaaatttcgc aacagtttat tagatatagt ccctaaacga     1080
aatgtcagg tggatgcatg attcagtgtg acgctcgggc ggatcacggc tgcgtcacga     1140
aaattcccc catgcaacc gcgtccggcc gtccttcgtg ccaacaggca acagcgcggc     1200
gccggcgaac gtcacgcca agattatatt cccctctctg cgctcgcgcg cgccgcgacg     1260
tcgtcggagc caacattatt tttctgtttc ctgtcaccgt cgccgttgat ctcaagcgag     1320
at ttgaggtt tggccacgac gacgcctgcc tataaatacc aggtgggtgg caccgcccgg     1380
cggcgtcgat cgatccgtcg cagtcgtctc cggcgagaaa tcggctgcgc cccgtctctc     1440
tctctctcga acgcttccat g                                         1461

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<210> 40

<211> 389

<212> PRT

<213> Triticum aestivum

<400> 40

Met Ala Arg Phe Leu Val Ala Leu Leu Ala Thr Thr Leu Val Ala Val
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Gln Ala Gly Gly Gln Leu Gly His Ala Ala Pro Ala Thr Ala Glu Val
 20 25 30

Phe Trp Arg Ala Val Leu Pro His Ser Pro Leu Pro Asp Ala Val Leu
 35 40 45

Arg Leu Leu Lys Gln Pro Ala Ala Gly Val Glu Leu Leu Thr Glu Ala
 50 55 60

Thr Ser Phe Val Arg Asp Ala Glu Asp Arg Pro Pro Phe Asp Tyr Arg
 65 70 75 80

Asp Tyr Ser Arg Ser Pro Pro Asp Asp Glu Pro Ser Lys Ser Thr Gly
 85 90 95

Ala Ala Ser Gly Ala Arg Asp Phe Asp Tyr Asp Asp Tyr Ser Gly Gly
 100 105 110

Asp Lys Leu Arg Gly Ala Ala Ser Gly Ala Arg Asp Phe Asp Tyr Asp
 115 120 125

Asp Tyr Ser Gly Ala Asp Lys Leu Arg Gly Ala Thr Asp Glu Tyr Lys
 130 135 140

Ala Pro Ser Ser Ser Leu Ala Gly Asn Gly Ala Ser Met Ala Arg Gly
 145 150 155 160

Gly Lys Ala Glu Thr Thr Thr Val Phe Phe His Glu Glu Ala Val Arg
 165 170 175

Val Gly Lys Arg Leu Pro Phe Arg Phe Pro Pro Ala Thr Pro Ala Ala
 180 185 190

Leu Gly Phe Leu Pro Arg Gln Val Ala Asp Ser Val Pro Phe Thr Thr
 195 200 205

Ala Ala Leu Pro Gly Val Leu Ala Thr Phe Gly Val Ala Ser Asp Ser

210 215 220
 Ala Thr Val Ala Ser Met Glu Ala Thr Leu Arg Ala Cys Glu Ser Pro
 225 230 235 240
 Thr Ile Ala Gly Glu Ser Lys Phe Cys Ala Thr Ser Leu Glu Ala Leu
 245 250 255
 Val Glu Arg Ala Met Glu Val Leu Gly Thr Arg Asp Ile Arg Pro Val
 260 265 270
 Thr Ser Thr Leu Pro Arg Ala Gly Ala Pro Leu Gln Thr Tyr Thr Val
 275 280 285
 Arg Ser Val Arg Pro Val Glu Gly Gly Pro Val Phe Val Ala Cys His
 290 295 300
 Asp Glu Ala Tyr Pro Tyr Thr Val Tyr Arg Cys His Thr Thr Gly Pro
 305 310 315 320
 Ser Arg Ala Tyr Met Val Asp Met Glu Gly Ala Arg Gly Gly Asp Ala
 325 330 335
 Val Thr Ile Ala Thr Val Cys His Thr Asp Thr Ser Leu Trp Asn Pro
 340 345 350
 Glu His Val Ser Phe Lys Leu Leu Gly Thr Lys Pro Gly Gly Thr Pro
 355 360 365
 Val Cys His Leu Met Pro Tyr Gly His Ile Ile Trp Ala Lys Asn Val
 370 375 380
 Asn Arg Ser Pro Ala
 385
 <210> 41
 <211> 362
 <212> PRT
 <213> Triticum aestivum
 <400> 41
 Met Ala Arg Phe Leu Val Ala Leu Leu Ala Ala Thr Leu Val Ala Val
 1 5 10 15
 Gln Ala Gly Gly Gln Leu Gly His Ala Ala Pro Ala Thr Gly Glu Val

20 25 30
 Phe Trp Arg Ala Val Leu Pro His Ser Pro Leu Pro Asp Ala Val Leu
 35 40 45
 Arg Leu Leu Lys Gln Pro Ala Ala Glu Ser Thr Ser Phe Val Arg Asp
 50 55 60
 Pro Glu Asp Arg Pro Pro Phe Asp Tyr Arg Asp Tyr Ser Arg Ser Ser
 65 70 75 80
 Ser Asp Asp Glu Pro Ser Lys Ser Thr Val Ala Ala Ser Gly Ala Gly
 85 90 95
 Gly Phe Asp Tyr Asp Asn Tyr Ser Gly Ala Asp Glu Arg Arg Gly Ala
 100 105 110
 Thr Asp Glu Tyr Lys Ala Pro Ser Ser Ser Leu Ala Gly Ser Gly Ala
 115 120 125
 Tyr Met Ala Arg Gly Gly Lys Ala Glu Thr Thr Thr Val Phe Phe His
 130 135 140
 Glu Glu Ala Val Arg Val Gly Arg Arg Leu Pro Phe His Phe Pro Pro
 145 150 155 160
 Ala Thr Pro Ala Ala Leu Gly Phe Leu Pro Arg Gln Val Ala Asp Ser
 165 170 175
 Val Pro Phe Thr Thr Ala Ala Leu Pro Gly Ile Leu Ala Thr Phe Gly
 180 185 190
 Ile Ala Ser Asp Ser Thr Thr Val Pro Ser Met Glu Ala Thr Leu Arg
 195 200 205
 Ala Cys Glu Ser Pro Thr Ile Ala Gly Glu Ser Lys Phe Cys Ala Thr
 210 215 220
 Ser Leu Glu Ala Leu Val Glu Arg Ala Met Gly Val Leu Gly Thr Arg
 225 230 235 240
 Asp Ile Arg Pro Val Thr Ser Thr Leu Pro Arg Ala Gly Ala Pro Leu
 245 250 255

Gln Thr Tyr Thr Val Val Ala Val Gln Pro Val Glu Gly Gly Pro Val
260 265 270

Phe Val Ala Cys His Asp Glu Ala Tyr Pro Tyr Thr Val Tyr Arg Cys
275 280 285

His Thr Thr Gly Pro Ser Arg Ala Tyr Thr Val Asp Met Glu Gly Ala
290 295 300

Arg Gly Ala Asp Ala Val Thr Ile Ala Ala Val Cys His Thr Asp Thr
305 310 315 320

Ser Leu Trp Asn Pro Glu His Val Ser Phe Lys Leu Leu Gly Thr Lys
325 330 335

Pro Gly Gly Thr Pro Val Cys His Leu Met Pro Tyr Gly His Ile Ile
340 345 350

Trp Ala Lys Asn Val Lys Arg Ser Pro Ala
355 360

<210> 42
<211> 82
<212> PRT
<213> Triticum aestivum

<400> 42

Met Ala Arg Phe Leu Val Ala Leu Leu Ala Ala Thr Leu Val Ala Val
1 5 10 15

Gln Ala Gly Gly Gln Leu Gly His Ala Ala Pro Ala Thr Ala Glu Val
20 25 30

Phe Trp Arg Ala Val Leu Pro His Ser Pro Leu Pro Asp Ala Val Leu
35 40 45

Arg Leu Leu Lys Gln Pro Ala Ala Gly Val Glu Leu His Thr Glu Ala
50 55 60

Thr Ser Phe Val Arg Asp Pro Glu Asp Arg Pro Pro Phe Asp Tyr Arg
65 70 75 80

Asp Tyr

<210> 43
 <211> 412
 <212> PRT
 <213> Oryza sativa

<400> 43

Met Ala Arg Phe Leu Leu Leu Val Ala Val Ala Ala Ala Ala Ala
 1 5 10 15

Val Leu Ser Leu Gly Asp Ala Ala Pro Ser Thr Ala Glu Val Phe Trp
 20 25 30

Arg Ala Val Leu Pro Glu Ser Pro Leu Pro Asp Ala Phe Leu Arg Leu
 35 40 45

Leu Arg Pro Asp Thr Ser Phe Val Val Gly Lys Ala Glu Ala Ala Gly
 50 55 60

Gly Ala Ala Arg Thr Gly Phe Pro Phe Asp Tyr Thr Asp Tyr Arg Gly
 65 70 75 80

Ser Asp Ser Pro Thr Thr Ala Ser Gly Leu Asp Leu Ala Gly Asp Phe
 85 90 95

Gly Glu Pro Ala Pro Phe Gly Tyr Asp Tyr Ser Ala Gln Gly Glu Gly
 100 105 110

Gly Gly Gly Gly Ala Ala Ala Ala Ala Gly Glu Gln Val Leu Ala Val
 115 120 125

Asp Ala Gly Phe Asn Tyr Asp Lys Tyr Val Gly Ala Arg Lys Leu Arg
 130 135 140

Gly Gly Ser Ser Thr Ala Gly Gly Glu Asn Asp Asp Glu Pro Phe Gly
 145 150 155 160

Tyr Asp Tyr Lys Ala Pro Ser Ser Gly Ser Gly Thr Ala Ala Ser Thr
 165 170 175

Thr Ala Arg Gly Val Gly Thr Gly Ala Thr Thr Thr Val Phe Phe His
 180 185 190

Glu Glu Ala Val Arg Val Gly Glu Arg Leu Pro Phe Tyr Phe Pro Ala
 195 200 205

Ala Thr Thr Ser Ala Leu Gly Phe Leu Pro Arg Arg Val Ala Asp Ser
 210 215 220

Ile Pro Phe Thr Ala Ala Ala Leu Pro Ala Val Leu Ala Leu Phe Gly
 225 230 235 240

Val Ala Pro Asp Thr Ala Glu Ala Ala Gly Met Arg Glu Thr Leu Arg
 245 250 255

Thr Cys Glu Trp Pro Thr Leu Ala Gly Glu Ser Lys Phe Cys Ala Thr
 260 265 270

Ser Leu Glu Ala Leu Val Glu Gly Ala Met Ala Ala Leu Gly Thr Arg
 275 280 285

Asp Ile Ala Ala Leu Ala Ser Thr Leu Pro Arg Gly Gly Ala Pro Leu
 290 295 300

Gln Ala Tyr Ala Val Arg Ala Val Leu Pro Val Glu Gly Ala Gly Phe
 305 310 315 320

Val Ala Cys His Asp Gln Ala Tyr Pro Tyr Thr Val Tyr Arg Cys His
 325 330 335

Thr Thr Gly Pro Ala Arg Ala Tyr Met Val Glu Met Glu Gly Asp Gly
 340 345 350

Gly Gly Asp Gly Gly Glu Ala Val Thr Val Ala Thr Val Cys His Thr
 355 360 365

Asn Thr Ser Arg Trp Asn Pro Glu His Val Ser Phe Lys Leu Leu Gly
 370 375 380

Thr Lys Pro Gly Gly Ser Pro Val Cys His Leu Met Pro Tyr Gly His
 385 390 395 400

Ile Val Trp Ala Lys Asn Val Lys Ser Ser Thr Ala
 405 410